

Smart Building Solutions

Library of National Chung Hsing University, Taiwan

Lighting Control and Management

Energy Saving

Central Management

Fully Automatic Control

Integrate with current System

1

Challenge

The 3rd Floor of the library installed Siemens KNX lighting control system in 2015, the system of the 4th floor need to integrated with the 3rd Floor in one management system.



Solution

KNX is worldwide standard Protocol and every brands can work in one system.



2

Challenge

Fully automatic control

Bookshelf Area Motion Detection

-An 4X0.8 M area between two bookshelf, 2pcs DALI panel lights in the ceiling

-About 70% of time nobody stay here, want to reduce power consumption but need to have enough luminance when the area is occupied

-Need one motion sensor to detect bookshelf area but shouldn't be triggered when people go through the reading area



2

Challenge

Fully automatic control

Bookshelf Area Motion Detection

Solution

-Dim to 50% when people enter in this area and dim down to 10% after people leave

-Disable the sensor detection after 10:00pm and change to manual control, enable the sensor after 8:00 am when the library is open



M/WS05.1-D
Microwave sensor

2

Challenge

Fully automatic control

Reading Area Motion and Lux Detection near the window

- The reading location is only in the area near to the windows
- This area has enough luminance in daytime



2

Challenge

Fully automatic control

Reading Area Motion and Lux Detection near the window

Solution

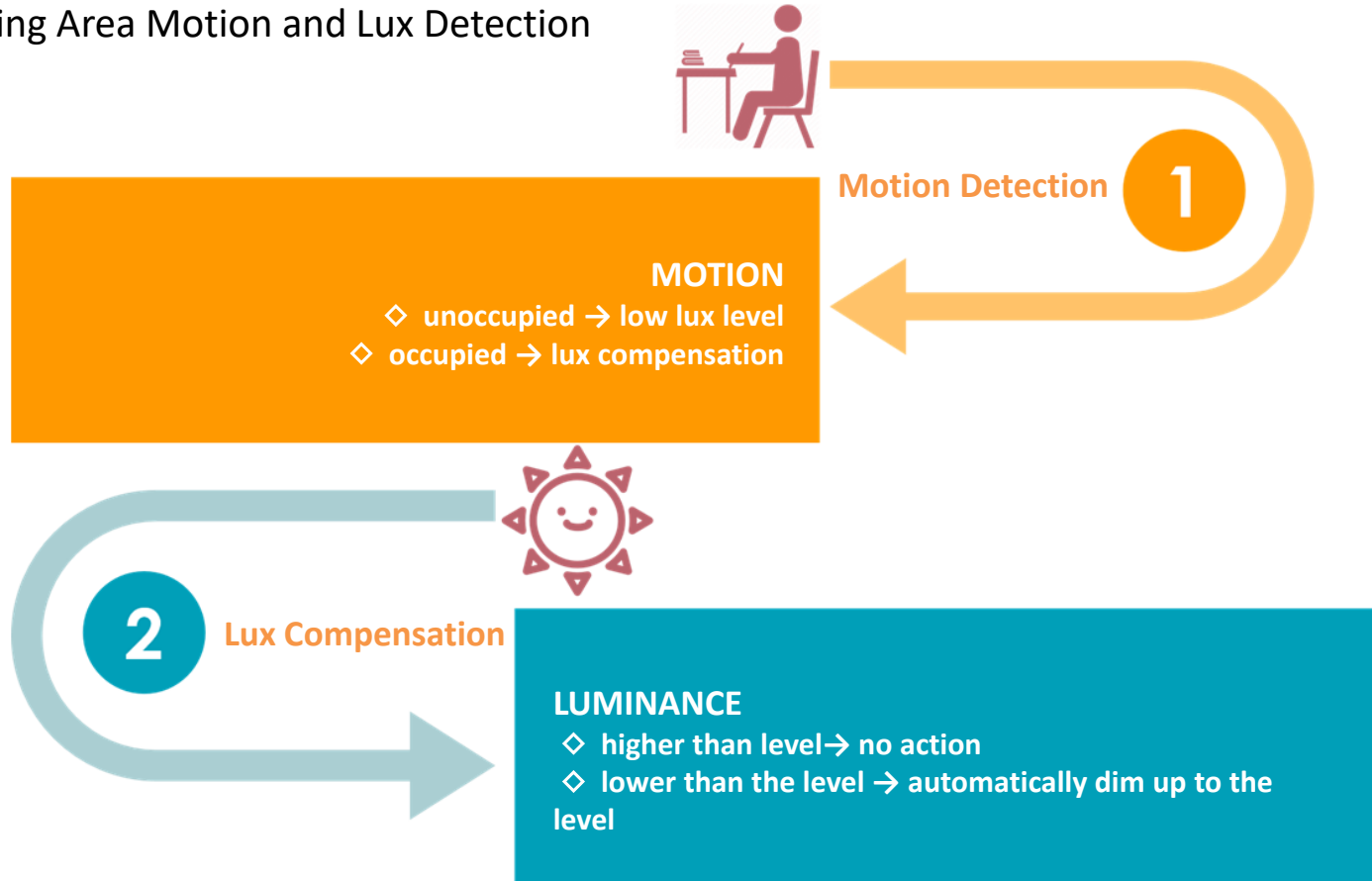
-Turn on the Lights when occupied and start constant brightness for 5 minutes, when the area is unoccupied, dim to 10% and switch off Lux detection

-Disable the sensor detection after 10:00pm and change to manual control, enable the sensor after 8:00 am when the library is open



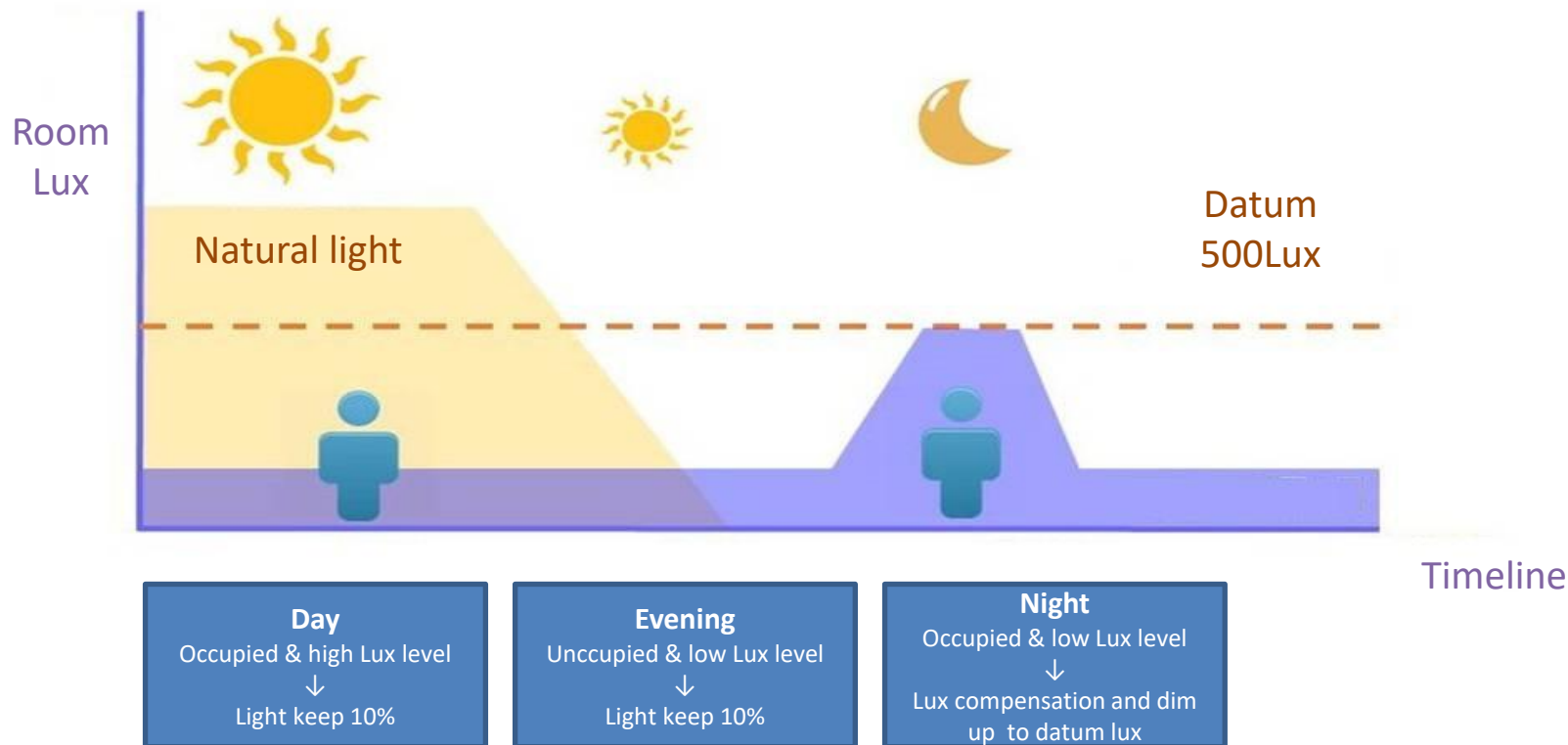
M/HSD24.1
Motion and Lux sensor

Reading Area Motion and Lux Detection



SOLUTIONS

Motion Detection and Lux Compensation



4

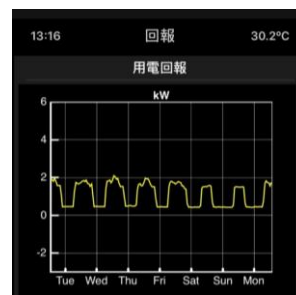
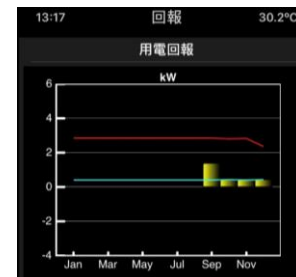
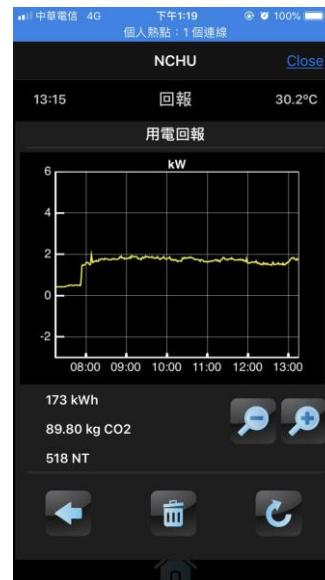
Challenge

Power Consumption and Energy Saving

Solution

-Digital Power meet can Measure voltage, current and frequency

-The central control monitor software can provide the report for weekly, monthly and yearly report



3

Challenge

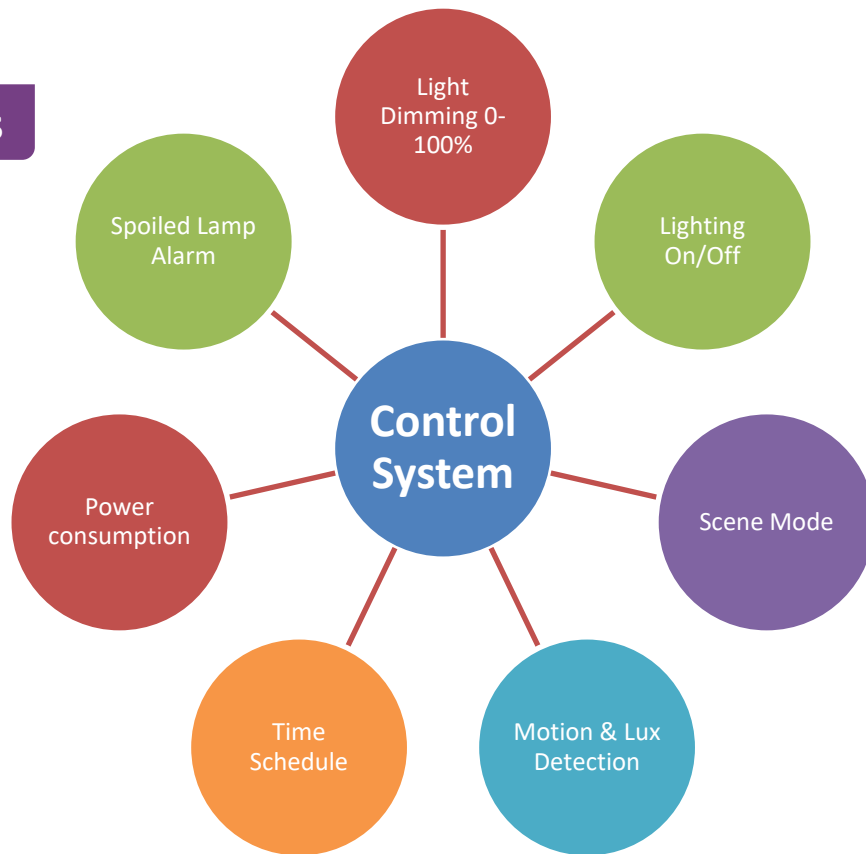
Central Management and Remote Control

PC software and Phone App Function:

- Lighting Dimming
- Enable & Disable the motion and lux sensor
- Set time schedule plan
- Spoiled item alarm
- Power consumption



System Functions



SUMMARY

System Diagram



Time Schedule



Internet Access



Control Server



Remote Control



Motion & Lux sensor



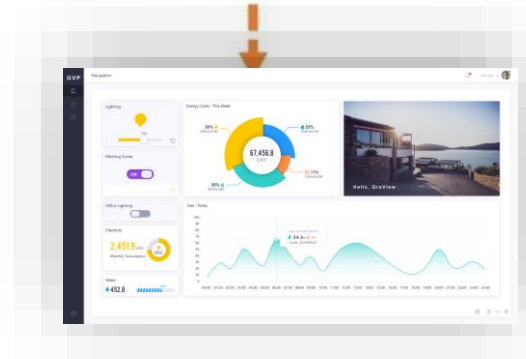
Dali Controller



Power Meter



Led Panel Light



What Can HDL Offer for A Commercial Building



Nu Sentral Mall Malaysia



Federation of Korea



Monash Hospital Australia



Polytechnic College



Lighting Control

HDL[®]

- ▶ Switching Actuator
- ▶ Phase Dimmer
- ▶ 0-10V Ballast Dimmer
- ▶ DALI Gateway
- ▶ DMX Gate



Lighting Control

12CH 16A Switching Actuator with Current Detection

buspro



- 12CH switching outputs for light/load control
- Rated operating current per output 16A
- Manual switching of the relays independent from the bus
- Timing function: switch-on delay time, switch-off delay time, staircase lighting timer
- Integration into light scenes and sequence control
- **Current detection:** monitoring of load current for each output, for reporting over-current, over-load and load drop-out

Shading Control



- ▶ Curtain Motor, AC 220V & DC 24V
- ▶ Curtain Motor with Dry Contact
- ▶ Roller Shutter Motor, AC 220V
- ▶ Curtain Actuator

Shading Control

Roller Shutter Motor

buspro **KNX**

- Powered by AC 220V
- Setting of open and close forced position
- Control of open, close, stop and percentage
- Integration into scene function
- Reporting of movement state, hanging position and manual operation



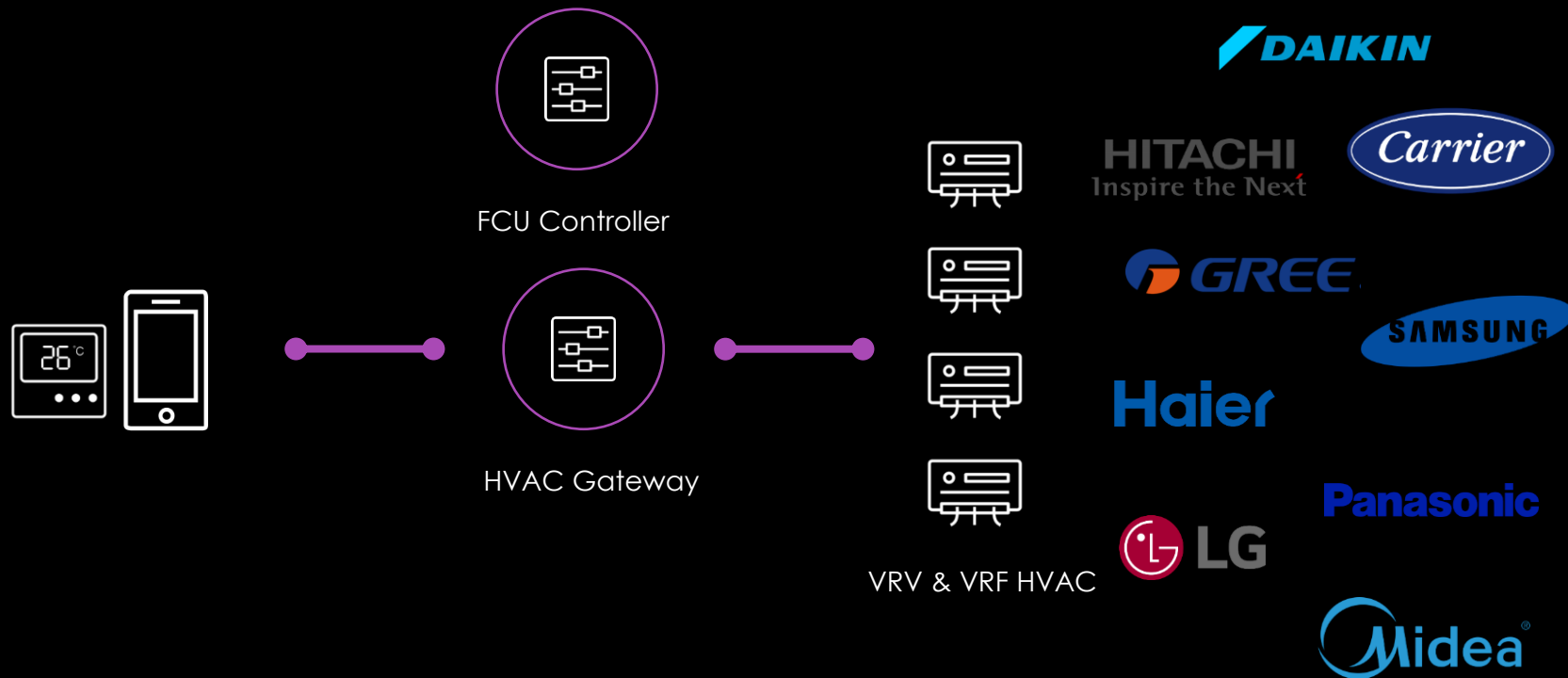
Buspro ver.



KNX ver.

HVAC Control

HDL[®]



HVAC Control

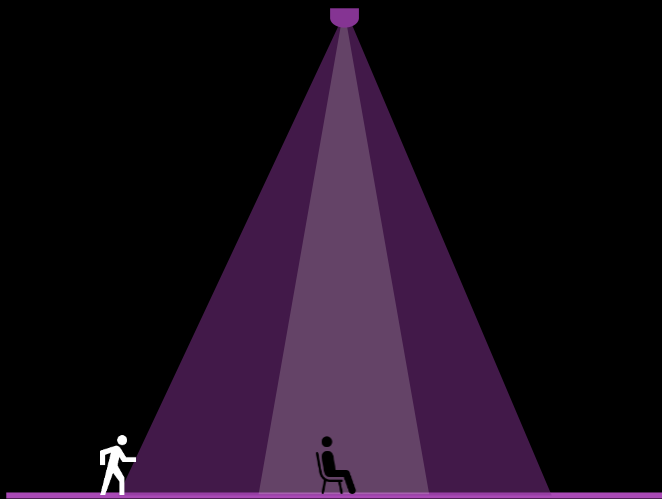
CoolBox HVAC Gateway



- Enables **VRV or VRF HVAC** connectivity
- Control of up to 64 HVAC indoor units
- Control of on/off, mode, speed, temperature
- Status monitoring for fault reporting
- Integration with: **Midea, Mitsubishi Heavy Industries, Mitsubishi Heavy-Haier, Mitsubishi Electric, York, LG, Samsung, Daikin, Panasonic, Haier, Toshiba, Hitachi, Hisense Hitachi, Gree, Carrier, Bosch, etc.**
- Supports online upgrading

Presence Sensor

HDL[®]



Hallway



Staircase



Warehouse



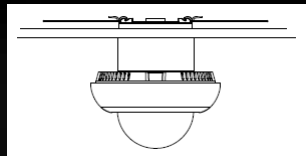
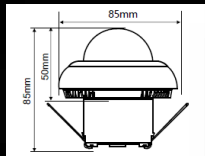
Office

Presence Sensor

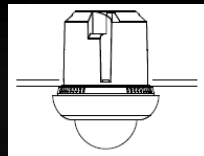
PIR Presence Sensor



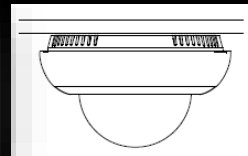
- 2 lighting output blocks
- Full- or semi-automatic mode with brightness-depending constant lighting control or switching control
- 2 HVAC output blocks
- Full- or semi-automatic mode with presence-depending HVAC control and time delay setting
- Master-slave operation to expand detection area
- 2 independent external inputs
- 4 independent logics and 1 combined logic



Ceiling-mounted



Flush-mounted



Surface-mounted



Energy Management

Energy Actuator



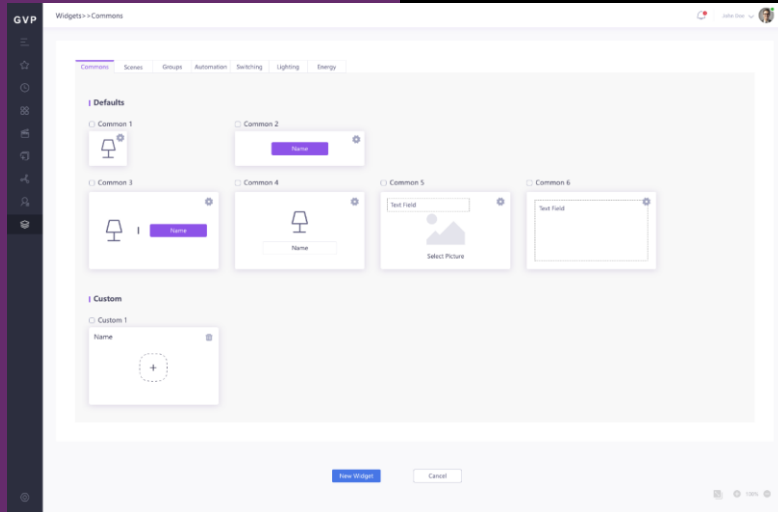
- Switch up to 3 single phases
- The maximum load current per output is 16A
- Suitable for switching loads with high peak inrush currents
- Can be displayed as three-phase power values
- Measurement of voltage, current, frequency, power factor, reactive power, apparent power, active energy, reactive energy
- **Transformer measurement** with external 200A transformer when the actuators are disabled

Commercial Building Solution

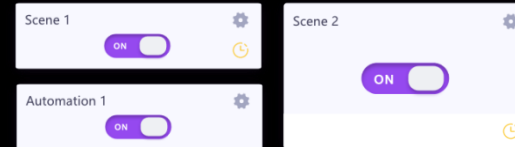
GraView Platform – Central Control



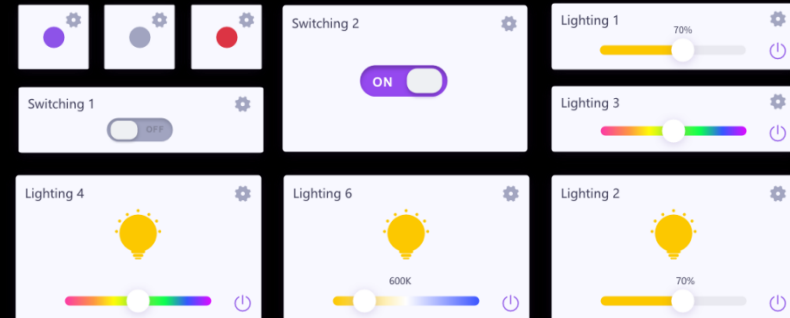
• Widgets - Commons



• Widgets – Scenes / Automation



• Widgets – Switching / Lighting



Commercial Building Solution

GraView Platform – Energy Management



• Widgets – Energy Management

Electricity

⚡ 2,451.9 kWh 60%

Heat

🔥 5,467.8 M³ 60%

Socket

300 W

Lamp

62 W

Water

💧 452.8 T 60%

Gas

🔥 7,645.8 KJ 60%

Electricity Consumption

⚡ Today 34.2 kWh

This Month 2,451.9 kWh

Electricity

2,451.9 kWh

Monthly Consumption 65%

Electricity

⚡ Consumption 1,028.2 kWh

4.3.4%

Electricity

⚡ Consumption 2,451.9 kWh

3.4%

Electricity Costs

⚡ Today 245.7 CNY

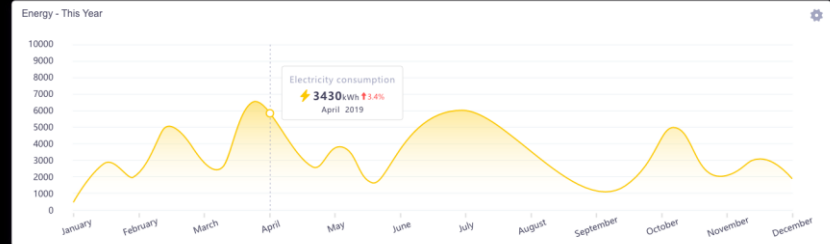
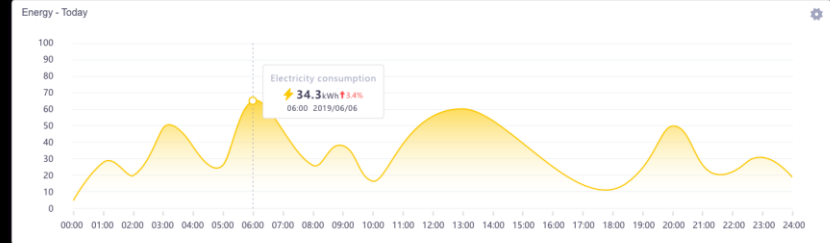
This Month 13,456.8 CNY

Lamp

62 W

Electricity Consumption

2,451.9 kWh



HDL[®]

Serious about smart buildings.